Impacts Case Study - Hawaii

(comparison of effect of benchmark and treatment)

Conservation Effects Worksheet

Truck Crop - Cabbage

(land use and crop)

Resource Setting: Maui, Hawaii

Soils - Keahua series - fine kaolinitic isohyperthermic Torroxic Haplustolls, 3-25% slope, 73°F mean temperature, clobbly structure, well drained, medium runoff, moderate permeability, 60+in. deep

Elevation - 600-1500 ft. 3.

Rainfall - 20 in.

Wind - high velocity area.

Average Air Temperature - 80°F

Growing Season - continual

Irrigation Availability - 5/8-2 in.

Natural Vegetation - buffelgrass, feather fingergrass, ilima, kiawe, lantana, pitted beardgrass, redleg grass, uhaloa, hale koa.

Air - minimal cane fire and volcanic emission pollution.

Animals - deer, chukars, pheasant, dove, francolin.

Conservation Treatment:

Land Preparation:
Land Smoothing (466)
Chiseling and Subsoiling (324)
Contour Farming (330)
Terraces (600)
Stripcropping (586)
Diversion (362)
Grassed Waterway (412)
Critical Area Planting (342)
Field Windbreak (392)
Hedgerow Planting (422)
Filter Strip (393)
Field Border (386)

Crop Management:
Irrigation Storage Reservoir (436)
Irrigation Water Conveyance (430)
Irrigation Water Management (449)
Irrigation System (441 & 442)
Nutrient Management (MLR-ALL)

Pest Management (MLR-ALL) Post Harvest:
Conservation Cropping Sequence (328)
Cover and Green Manure Crop (340)
Mulching (484)

Resource Problems Before Treatment:

Soil erosion and surface runoff
Insufficient irrigation and nutrient application
Weed and insect control
Low yield
Labor

NRCS, HI
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IMPACTS	DECISIONMAKERS EVALUATION (+ / -)	Comment
Land Smoothing (466)		
- Conservation plan provides long range program for action.	+	Meets county requirements.
- Controlled soil movement.	-	Requires bulldozing for expensive one time operation.
- Flat, friable fields	+	Farming is easier on level ground.
- Rocks piled/removed		
Chiseling and Subsoiling (324)	+ / -	Requires tractor/machinery and fuel but not necessary.
- Adequate room for root growth.	-	Can not do if soil is to wet
- No water logged roots		
Contour Farming (330)	-	SCS help needed to install.
- Reduces soil erosion rates to below T (5 tons/acre).	+ / -	Results in short rows, non-farmeable areas.
Terraces (600)	-	SCS help heeded to install.
- Reduces soil erosion rate below T (5 tons/acre).	+ / -	Must clear outlets and regrade periodically.
- Channels runoff from field.	-	Requires special equipment.
		Results in non-farmeable areas.
Stripcropping (586)		
- Reduces soil erosion rate below T (5 tons/acre)	+ / -	SCS help needed to install.
		Different crops require different management.
Diversion (362)	-	
Diverts runoff from field	+/-	SCS help needed to install.
	-	Must clean outlet and regrade periodically.
	-	Requires special equipment.
		Results in non-farmeable areas.
Grassed Waterway (412)	-	SCS help needed to install.
Slows and channels runoff	-	Requires special machinery
Provides wildlife habitat	+	Helps preserve environment.
Filters pesticides	+	Place to eat and relax.
Aesthetically pleasing.	+	Results in non-farmeable area

IMPACTS	DECISIONMAKERS EVALUATION (+ / -)	Comment
Critical Area Planting (342)	+/-	
Reduces weeds and pests.	+	May require irrigation = added expense
Plants slow water velocity.	+	
Aesthetically pleasing	+	Unsightly weeds replaced.
Field Windbreak (392) and **Hedgerow Planting** (422)	+/-	
Reduces wind erosion and plant damage	+	May require irrigation = added expense
Reduces evapotranspiration.	+	Plants stand up straight.
Provides privacy.		Reduces irrigation cost.
Filter Strip (393)		
Water quality maintained	+	Clean streams, gullies, and pond
Provides wildlife habitat	+	A sportsman/naturalists' dream
Field Border (386)	+	
Reduces weed and insect populations	-	A component of IPM program
Provides wildlife habitat	+	May require irrigation
Crop Management		
Irrigation Storage Reservoir (436)	+/-	More efficient systems are costly and must pay off - cost of water rising so are economically viable.
Water Conveyance (430)	+	
Irrigation Water Management (449)	-	May need professionals to install.
Irrigation Systems (441 & 442)		
Manages irrigation water effectively.		
Nutrient Management (590)		
Apply based on yearly soil and tissue analysis for each field.	-	Humbug to collect samples and keep records
Applies correct amount of nutrients at the proper time	-	Calculating fertilizer applications is difficult
Application of lime may increase fertilizer efficiency	+	Fertilizer yield per cost maximized
Water quality maintained	+	Satisfies environmentalist.

IMPACTS	DECISIONMAKERS EVALUATION (+ / -)	Comment
Pest Management (595)		
Pests managed with cost effective means.	-	Pesticide misuse possible.
Non-chemical controls used before chemicals.	-	Addresses water quality concerns.
Minimal drift.	-	Limited IMP information.
	-	Difficult to understand labels and apply.
	-	Available pesticides change frequently.
		Record keeping is humbug.
Post Harvest		
Conservation Cropping Sequence (328)		
Soil fertility, structure and water holding capacity enhanced	-	Must adhere to tight schedule (rains may throw off)
Soil erosion is <5 tons/acre.	+	Land is not producing cash crop = no income
Cover and Green Manure Crop (340)		
Soil erosion is <5 tons/acre	+	Fertilizer cost reduced in long run
Organic matter is added to soil. -	-	May require inputs in the short run
Filters movement of sediment pathogens, and pesticides	-	May harbor insect pests.
	-	Requires machinery and fuel.
Mulching (484)		
Same as cover crop above		
Comments:		
Lack of research data and variability among farms and farming practices prohibits giving exact impact. ASCS cost sharing available for many practices.		